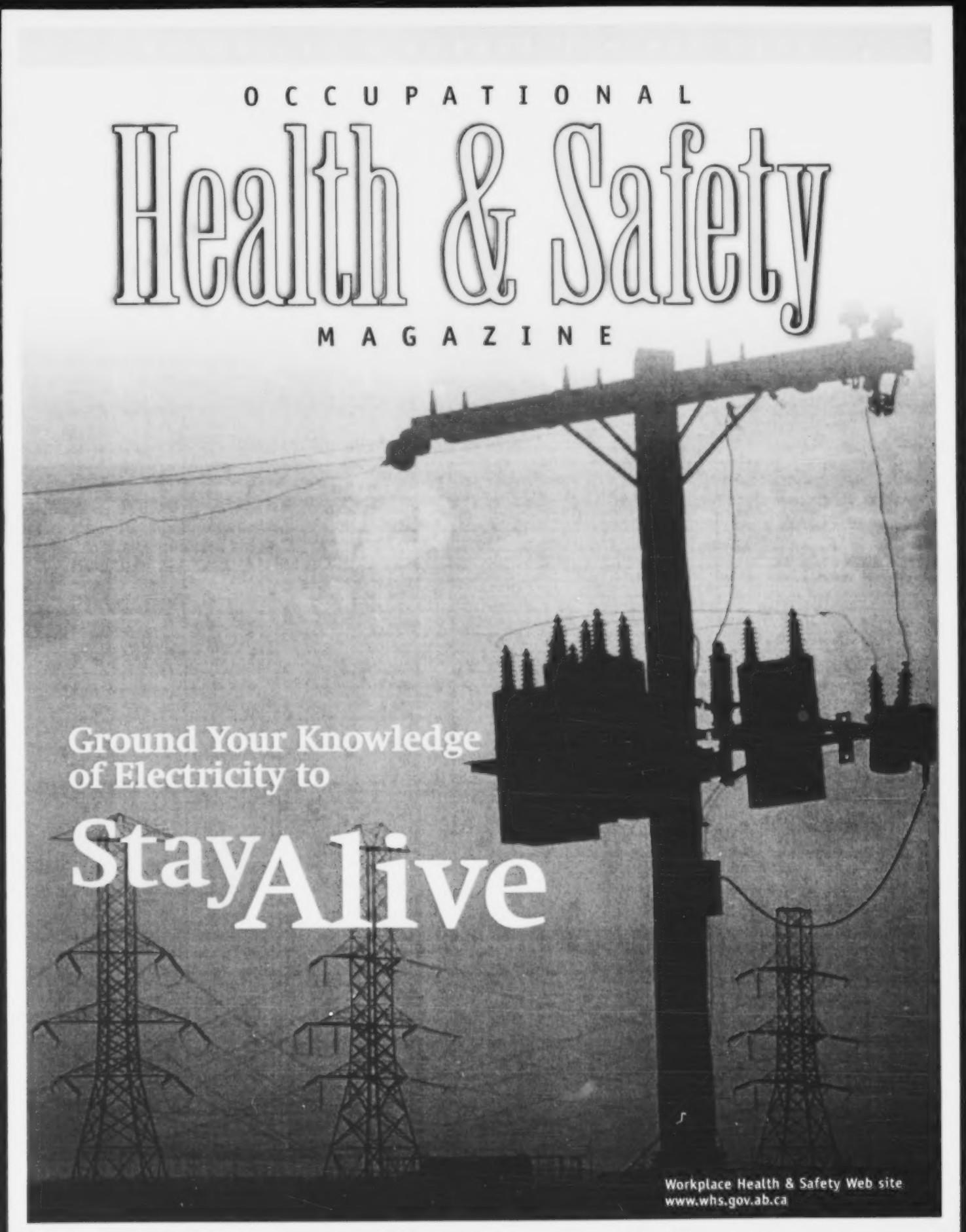


O C C U P A T I O N A L

# Health & Safety

M A G A Z I N E



Ground Your Knowledge  
of Electricity to

# Stay Alive

## and working in good health

by Dee Kramer

**W**hile winter is always an active season for northern Alberta's industries, the region's recent unprecedented economic growth has led to exceptional demand for skilled workers. Unfortunately, they aren't available. Never before



have so many young, unskilled and untrained workers been found on work sites. At the same time, all workers on any site feel tremendous pressure to get their jobs done — and done fast.

Many workers are young, and this is often their first job. They are away from home, and expected to work particularly long hours. Some travel over frozen muskeg and rivers into the isolated bush, laying

down oil and gas pipes to connect refineries to field locations. Others work in the pipes, towers, stacks, steel scaffolding, storage tanks and chimneys that make up an oil refinery's Meccano-set of steel.

What are some of the safety issues they face? First, there's little time. It's easy to get careless. It's easy to take shortcuts. It's easy for injuries to occur. Supervisors get careless about confined spaces, lock-out procedures and WHMIS training. There doesn't seem to be enough time for safety meetings. There isn't the time to make sure all the workers are wearing their harnesses and personal protective equipment.

When we look at preventing injury under these circumstances, we have to look beyond the implementation of safety procedures. While the physical demands of work clearly play a large role in the potential for injury, the psychosocial work environment — how a person interacts with their work environment — is also an important factor. If a worker is young, new on site and feeling insecure, how likely is that person to pay strict attention to safety procedures?

**Perspectives**  
Scientists at the Institute for Work & Health in Toronto have investigated the causes of injuries and illness in the manufacturing, service and health-care sectors. After conducting studies of chronic back pain, pain in the arm and hand, heart health and mental health problems, they concluded that you need to look at both physical and psychosocial factors to reduce injuries and create a healthy work environment. If you focus on physical issues, without looking at organizational factors, you miss half the story. Psychosocial factors also lead to injuries and illnesses.

The Institute's research shows that high pressure work environments, such as those found in Alberta's oil, gas and construction sectors, can lead to injuries and mental health problems. In these environments workers may feel powerless. When employees have no influence over workplace conditions, they lack the necessary control to avoid potential physical or psychosocial threats. This is a particular problem for young, inexperienced workers who are afraid to ask for help.

Injuries and chronic illnesses can result if workers don't have the skills to perform the jobs they're asked to do or if tasks are new and unfamiliar. Injuries also occur when workers are prevented from making decisions about how to do their work and when they have little or no say about what happens in their job. If workers face conflicting demands and job insecurity, and work is hectic, there's additional risk.

The social environment at the workplace also affects the potential for injury. When workers lack support from their co-workers or supervisor, or work in a hostile environment, their injury rate is higher. A non-supportive environment is dangerous to workers' health and safety.

Injuries and chronic illnesses (for example, heart disease and mental health problems such as anxiety and depression) occur when workers think their efforts go unacknowledged or unrewarded. Distress is inevitable when employees, who hold stressful jobs that entail significant responsibility, also believe they are being treated unfairly, have poor job promotion prospects and are not receiving the respect or salary they deserve.

But changing a firm's safety focus to include psychosocial factors is not that easy. "There is an enormous challenge in changing the workplace psychosocial environment. It's easier to only focus on physical safety issues," says Donald Cole, senior scientist at the Institute. "The psychosocial work environment relates to the organizational culture of a workplace, and that takes more effort to change. But some changes have been made and there have been some successes."

Cole says the greatest potential may be for integrated programs that target overall risk factors. The company will have a higher chance of success if health and safety is adopted as part of the company's overall strategic goal and is tied into productivity and quality. What is most important is for intervention efforts to use a combined approach that considers both physical and psychosocial factors when setting objectives, goals and strategies.

*Dee Kramer is a research transfer associate at the Institute for Work & Health in Toronto, Ontario. To find out more about the Institute's work and publications, see [www.iwh.on.ca](http://www.iwh.on.ca).*

O C C U P A T I O N A L

# Health & Safety

MAGAZINE

A Workplace Health and Safety  
Alberta Human Resources and Employment publication

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# New Equipment

If something's new...watch out!

The Petroleum Safety Council (PSC) alerted *Occupational Health & Safety Magazine* to what has been referred to as New Equipment Syndrome ("If it's new, it's gotta be good") after a frightening near miss at an oil lease site.

A derrickman wearing a new safety harness had tied off and was leaning out from the platform of the rig when the sling of the harness broke. Luckily, he caught himself on the pipe and didn't fall. When the harness was inspected, it was clear that the D-ring end of the sling had not been fully assembled: the webbing material had been folded around the D-ring and glued together, but not stitched. The company then inspected other newly purchased

equipment and found that four out of five tie-off adapters were defective.

After the near miss, everyone felt a sense of responsibility for not having caught the defective equipment. The problem was that the employees had assumed the equipment was fine because it was new.

PSC advises anyone about to hand over equipment for use to check it over thoroughly first. Read the operating instructions and inspect the equipment closely to make sure there are no obvious defects. The extra minute or two you spend looking at the equipment may protect you, or a co-worker, from serious injury.

## in safety

**C**hemco Electrical Contractors Ltd. and Davco Machine Ltd. have received the 2001 WorkSafe™ Award, sponsored by the Workers' Compensation Board - Alberta.

Included among the Alberta Chambers of Commerce Business Awards of Distinction, this award recognizes the continued support and dedication by employers to the health and safety of their employees and contractors. This year, for the first time, the award was presented in two categories: large employers (100 or more full-time employees) and small employers (fewer than 100 full-time employees).

Davco Machine Ltd. won the honours in the small employer category. The company's safety program, developed with input from employees, extends beyond the workplace by encouraging employees to adopt healthy lifestyles and take an active role in identifying opportunities to improve

safe practices. Davco's safety record and exceptional yearly audit scores provide the company with a strong competitive advantage when it bids on new projects.

The winner in the large employer category, Chemco Electrical Contractors Ltd., introduced a corporate-wide health and safety program after consultation with management and all employees. The program includes an extensive employee and subcontractor training program, a new employee orientation and mentoring program, incident reporting, a modified work program and an innovative on-the-job exercise program, the first of its kind in that particular industry. The exercise program, which is now part of the company culture, has reduced the number and severity of workplace strains.

## Alberta trucking associations

**T**wo organizations representing the interests of the trucking industry in Alberta have amalgamated. The Alberta Trucking Association (ATA) and the Alberta Trucking Industry Safety Association (ATISA) have joined forces under the name Alberta Motor Transport Association.

The programs and services previously offered through each organization – development and delivery of safety programs (ATISA), and regulatory and operational issues (ATA) – will continue to be offered by the new association.

## Standardized hand signals adopted by petroleum industry

Until recently, no standard set of hand signals existed for directing the movement of vehicles to loading docks or around industrial work sites. Now the petroleum industry has introduced a recommended practice, "Hand Signals for Directing Vehicles," to improve safety at industrial sites. The petroleum industry worked with its service sectors and the trucking industry to develop the signals and the practice, which have been accepted across western Canada. Posters illustrating the signals are available from the Petroleum Safety Council at 1-877-827-2331.

### Stop Signals



### Turn Signals



Point one arm to indicate direction to turn.

Bend motioning arm repeatedly towards head to indicate continued turning.

## Updated

[www.canoshweb.org](http://www.canoshweb.org)

**N**ew access to OH&S information: Check out Canada's most extensive gateway to occupational health and safety services and information. The site features easy access to public, governmental and Canadian Centre for Occupational Health and Safety (CCOHS) resources.

## Study Finds Back Belts

A National Institute for Occupational Safety and Health (NIOSH) study has found no evidence that back belts reduce back injury or back pain for retail workers who lift or move merchandise. Findings are based on the results published in the December 6, 2000, issue of the *Journal of the American Medical Association* (JAMA).

NIOSH reported: "The results of the new study are consistent with NIOSH's previous finding, reported in 1994, that there is insufficient scientific evidence that wearing back belts protects workers from the risk of job-related back injury."

[www.cdc.gov/niosh/beltinj.html](http://www.cdc.gov/niosh/beltinj.html)

Workplace Health and Safety publication  
*Let's Back Up a Bit — Some Truths About Back Belts*  
(PH003)

## offers

### Occupational Health Nursing Certificate

Recent changes to the *Occupational Health & Safety Act* have reinforced the need for proactive preventive strategies to reduce the frequency of workplace incidents.

Under the *First Aid Regulation*, work sites employing more than 200 workers must provide the services of a registered nurse with advanced first aid, or an emergency medical technician-paramedic, in addition to certified emergency first aiders. Occupational health nurses are in high demand as employers move to implement preventive health strategies.

Grant MacEwan College offers a post-diploma certificate in Occupational Health Nursing that prepares registered nurses for the demands of workplace health and safety. Offered entirely through distance delivery, this innovative program was the first of its kind in North America and continues to evolve to meet the changing needs of industry. Print and Internet courses offer a realistic overview of the challenges that face today's workplace health professionals. To find out more about the Occupational Health Nursing Certificate program, call (780) 497-5188, toll-free 1-888-497-9390, or visit [www.hcs.gmcc.ab.ca/occupationalhealth/](http://www.hcs.gmcc.ab.ca/occupationalhealth/)

## What does do for

Workplace Health and Safety (WHS) helps employers and workers ensure safe, healthy and productive workplaces in Alberta by:

- providing workplace health and safety information and assistance to all Albertans
- investigating serious incidents and complaints about potential work site hazards
- partnering with industry leaders and safety associations to develop health and safety programs
- enforcing the *Occupational Health and Safety Act*

- information about the law and you
- a list of approved training agencies and courses
- access to WHS publications, videos and statistics
- guidance for new workers
- the opportunity to send your questions to an occupational health and safety expert
- the opportunity to lodge a complaint
- information about the Partnerships in Health and Safety Program

WHS is a division of Alberta Human Resources and Employment and falls under the jurisdiction of Minister Clint Dunford.

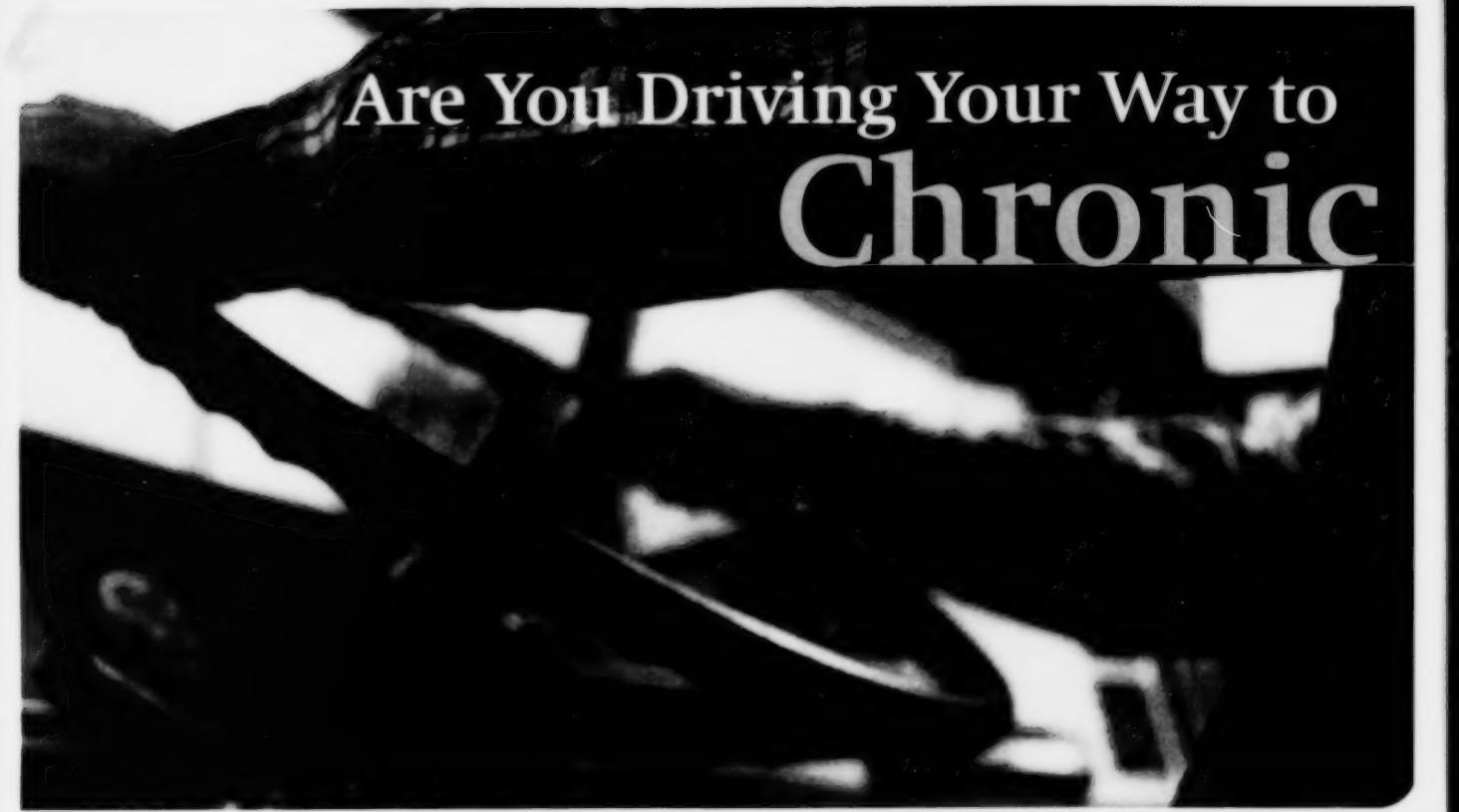
The Alberta Human Resources and Employment Library houses a large selection of occupational health and safety information materials. It is linked electronically to 25 university, college, health and government libraries across Alberta. You can search the library catalogue over the Web through [gate.library.ualberta.ca](http://gate.library.ualberta.ca). The Alberta Human Resources and Employment Library location code is AB HR & Employment.

To borrow materials, please contact your local library and make your requests through the inter-library loan process. Or you can visit the library in person at:

- 3rd Floor, 10808 - 99 Avenue  
Edmonton, Alberta T5K 0G5
- (780) 427-8533 or toll-free, 310-0000
- (780) 422-0084
- [www.gov.ab.ca/lab/facts/av](http://www.gov.ab.ca/lab/facts/av)

Workplace Health and Safety produces publications on a variety of occupational health and safety subjects. Publications come as manuals, brochures, booklets, bulletins and posters, and are regularly reviewed and updated.

Over 200 publications are available from Workplace Health and Safety. Find them on the WHS Web site, [www.whs.gov.ab.ca](http://www.whs.gov.ab.ca) or order them through the WHS Call Centre, 1-866-415-8690.



# Are You Driving Your Way to Chronic

by Allan Sheppard

**W**ould you believe that you can get a serious work injury doing nothing more physical than sitting quietly and watching the world pass smoothly beneath the wheels of your vehicle? You had better believe you can, especially if you are a professional driver of delivery or long-haul trucks, transit or inter-city buses, taxis, or even forklift trucks.

Sitting for long periods is a kind of repetitive or prolonged stress sometimes called *static work*. It can lead to lower back pain and other stress-related back and spine problems. Lifting, pulling, pushing and carrying cargo or luggage (materials handling) also put drivers at risk for back, muscle and joint injuries. Even something as seemingly harmless as looking over one's shoulder while driving in reverse or tipping the head backwards to view high shelving can cause problems for the forklift operator who repeats that action many times in a typical shift. In addition, road and vehicle vibration can cause spinal degeneration and compression injuries.

Musculoskeletal injuries (injuries of the bones, joints, ligaments, tendons, muscles and other soft tissues, collectively known as MSIs) are occupational hazards for drivers. In her *Driver's Back Manual*, physical therapist Kathy Hilborn says the risk of back pain increases "two to four times" for anyone who drives more than 30 kilometres a day. Workplace Health and Safety records show that truck drivers rank first among the top 10 in overexertion injuries (1996 - 2000) and ninth in repetitive motion injuries. General trucking service workers are tenth in repetitive motion injuries.

"The risk of disk herniation (rupture)" Hilborn adds, "increases by four times" for truck drivers and two times for car and tractor drivers. Hilborn points to "a direct link between vibration from a vehicle and lower back pain," while "complaints of tension, fatigue and pain" increase as vibration increases.

Drivers also get MSIs due to poorly designed cabs and driver compartments. Frequently used controls may be hard to reach and require awkward

postures or great force to operate. Seats may not support the lower back and spine. Seat suspensions may not dampen vibrations effectively. Drivers of transit buses, which seldom have power steering, suffer overexertion MSIs of the shoulders and arms.

Effective injury-reducing equipment and ergonomic features are now available in new vehicles. But that still leaves untouched the problems already built into existing vehicles.

Banff-based Brewster Transport Co. Ltd. faced this challenge a few years ago when, as regional manager Bill Hope recalls, "some drivers mentioned having problems with certain coaches in the fleet." Agreeing that "it just seemed to make good sense" to look at retrofitting older coaches, Hope soon discovered that Brewster needed expert help.

Hope turned to Diane Stinson, president of HealthWorks, a Calgary-based ergonomics consultant. HealthWorks surveyed Brewster's fleet and drivers to develop recommendations for equipment modifications and materials. Videos were developed for use in training seminars for drivers.

# Pain?

## MSIs in the Transportation Sector

*Physical discomfort to drivers*

Besides teaching drivers how to adjust seats and controls to achieve the maximum effect and how to use lumbar supports and other portable aids, Stinson also offers a number of simple stretches and shifts in posture to avoid static work stress while driving. Hilborn includes a similar set of exercises in her book.

Stinson and Hilborn also offer sets of exercises to help minimize injuries from the materials handling work that most drivers also do. Long-distance truckers and inter-city bus drivers often move quickly from long periods of sitting to short bursts of strenuous activity when they unload cargo or reach into bus bellies to shift and remove luggage. Making such transitions without proper warm-up

Stinson has also worked as a consultant for Bridge Brand Food Services Ltd. and Coca-Cola Bottling Ltd., both of which operate large delivery fleets as well as long-haul operations. Because delivery drivers normally don't make long trips, they're less at risk for static work injuries. Instead, they risk overexertion, lifting, pulling and carrying injuries while loading and unloading cargo, and carrying or wheeling packages up and down stairs and in and out of cramped quarters. Delivery drivers need to be, and often are, more aware of, and willing to practice, good materials handling techniques. Establishing good lifting techniques is essential to avoid injury. Additionally, it's very important for delivery drivers, says Stinson, to stretch and warm up properly and to keep fit.

"MSIs are seldom fatal," says Ray Cislo, a safety engineering specialist at Workplace Health and Safety, "but they can lead to serious pain, and a worker in pain cannot concentrate fully on the task at hand." That can lead to further injury. It can also bring personal inconvenience or economic hardship, and it can threaten the safety of passengers and other vehicles.

MSIs are complex and subtle. It is often hard to convince sufferers that specific changes in behaviour will lead to improvement, especially when the effects of those changes may be delayed. In many cases, if not most, it's difficult to identify the exact cause of an MSI or the tissues affected.

MSIs present many symptoms — sharp pains, dull aches, tingling or numbness, burning sensations, swelling, redness, tenderness — and develop in three stages. The first stage, which is reversible with rest and therapy, involves short-term discomfort, some aching and weakness that improve on days away from work, and minimal interference with work tasks. In the second stage, when recovery is

still possible, symptoms and discomfort develop faster and may persist for months. The sufferer may have difficulty sleeping and performing normal tasks. At the final stage, when likelihood of recovery is poor, symptoms may be present even at rest. Sleep and daily living are disturbed, and the worker can't perform light duties.

MSIs are serious. But they can be prevented with knowledge and training, well-designed equipment and physical preparation. And they can be treated — if not left too long unattended.

"Pain is not the first warning sign of problems," says Kathy Hilborn, "it's the last sign. Pay attention," she adds, "to these important early warning signs: fatigue, tightness, soreness, stiffness, burning, tingling in the neck and shoulders, back and limbs. Don't wait for pain before you change."

*Allen Sheppard is a freelance writer and researcher. He lives in Edmonton.*

amounts to an open invitation to MSIs. By doing some simple warm-up exercises that help loosen muscles and joints and allow ligaments in the back to firm up again, Stinson notes that drivers can prepare themselves for strenuous tasks.

Stinson insists that driving, particularly for those who unload luggage and make deliveries, is physically demanding, often intensely so. Drivers have the best chance of avoiding short- and long-term MSIs when they are physically fit. This means that additional attention to fitness over and above the time spent at work is required. That, Stinson adds, can be a challenge in a work culture where the preferred way to take a break is to "sit down for a cup of coffee."

[www.heavydutytrucking.com/  
2000/12/014a0012.asp](http://www.heavydutytrucking.com/2000/12/014a0012.asp)

The Occupational Safety and Health Administration (OSHA) ruling on transportation injuries.

[www.cdc.gov/niosh/ergtxt6.html](http://www.cdc.gov/niosh/ergtxt6.html)

A NIOSH study on MSIs and work.

[www.heavydutytrucking.com/  
1999/11/127a9911.asp](http://www.heavydutytrucking.com/1999/11/127a9911.asp)

Low back pain research.

[www.backpain.org/fs-driver.htm](http://www.backpain.org/fs-driver.htm)

Back care for drivers.

[www.hse.gov.uk/hthdir/noframes/  
musculo.htm](http://www.hse.gov.uk/hthdir/noframes/musculo.htm)

MSIs and materials handling.

### Books

**Drivers' Back Manual, An Ergonomic Guide to Injury Prevention**

by Kathy Hilborn

Edmonton, Alberta: Injury Reduction Systems,

A Division of Alberta Back School Inc.

Edmonton, 1997

(RD 768 HS4 1997)

# Ground

## Knowledge of Electricity

by Norma Ramage

**G**ord Decker, safety coordinator for UtiliCorp Networks Canada, uses hazard boards — table-top simulations of electrical hazards — when he teaches adults about the dangers of electricity. The board provides 16,000 volts of electricity, and Decker concludes his presentations by causing a short circuit, which cooks a smokie. He points out that the sausage is composed of meat, fat and water, much like the human body, and that what electricity did to the smokie, it can also do to his listeners.

"I tell them the smell of that burned meat is a lot like the smell of burned human flesh," says Decker, who is also chairman of the Alberta Electrical Utility Safety Association (AEUSA). "That gets their attention."

And getting people's attention is what it's all about when it comes to educating them about the dangers of electricity in the workplace. The problem, says Decker, is that people are too comfortable with electricity because it is everywhere in their daily lives. This attitude prevails despite

statistics from Alberta Municipal Affairs indicating that 17 fatalities and 104 non-fatal injuries were caused by contact with overhead or underground electrical power lines between 1991 and mid-2000.

People have to be educated to think of electricity as a potential hazard.

Bert Noble, occupational health and safety officer with Workplace Health and Safety (WHS) in Lethbridge, says electricity is a serious concern "because there are no minor injuries from high-voltage electrical sources." A major jolt of electricity can raise the blood temperature to such a degree, says Noble, "it can destroy blood vessels, body tissue and organs."

No industry is immune to electrical hazards. "Truckers, oil field workers, heavy equipment operators, farmers, crane operators and electrical workers like linemen are among those most at risk," says Noble. "But since electricity is everywhere, no one is immune."

Overhead power lines pose the greatest workplace risk because they often carry higher voltage and are

difficult to see because of environmental conditions and human physiology — people have a horizontal vision plane and normally don't look overhead. Underground lines, although better insulated, are also dangerous, and have accounted for eight reported injuries in the last decade.

Noble says the key to reducing electricity-related injuries and death is education. Currently in Alberta, there is no single industry-wide safety-training program for electrical hazards. However, WHS is working with the AEUSA and input from industry stakeholders to investigate the feasibility of such a program. Until then, industry and safety associations, companies and individuals must continue the process of educating workers about electricity and its hazards.

# You to Stay ALIVE

First, says Tom Bestwick, supervisor of safety with Calgary-based electrical utility Enmax, people have to understand how electricity works. "You have to know that electricity takes any path to the ground, and that path could be through your body."

Second, they need to understand electrical step potential. Bestwick explains that electricity radiates outward from a source such as a downed power line the way ripples emanate from a rock dropped in a pool. "Each of those ripples or rings has a different electrical potential, with the voltage getting lower the further you go from the source."

Since electricity can only flow when it moves from one electrical potential to another, the danger comes when a person forms a bridge between two levels of

potential. That's why when a vehicle such as a crane or a backhoe touches a live electrical wire, drivers should call for help and stay inside the vehicle. If they have to leave, says Bestwick, they should jump clear of the vehicle and then jump with both feet together to safety. "As long as the driver stays inside, he and the vehicle are at the same electrical potential and he's safe. If he has to leave, jumping minimizes the chance of him stepping on two areas of different potential at the same time and allowing the electricity to flow."

Once in a safe area, stay there, says Bestwick, recalling the case of a truck driver who jumped and shuffled to safety only to return to his truck a few minutes later thinking it was then safe. "He was standing on the ground, then touched the door handle. This bridged two levels of potential and killed him." Never, says Bestwick, assume a downed line is safe unless a utility worker tells you so.

- Educate yourself and your workers
- Develop safe work procedures
- Consult the utility company to find out the voltage of lines on site or in your path of travel
- Know and pay attention to safe clearance distances listed in the *General Safety Regulation*
- Remind workers repeatedly to stay away from lines, use signal people, signage
- Develop tag and flag systems to mark safe distances from power lines on site

- Stay in the vehicle and call for help
- If you must leave, jump with both feet together away from your vehicle
- Stay clear of the vehicle until a utility representative tells you it's safe to return

# What to do if you make contact

If your equipment contacts an electrical conductor, leave the machine only as a last resort. In an emergency situation, when you must leave, make sure you jump clear of the machine.

DO NOT, under any circumstances, step down and allow any part of your body to contact the ground while any other part of your body is touching the machine.

Once on the ground, jump away from the machine with your feet together. Keeping your balance, jump as far from the machine as possible (approximately 10 metres).

Because of hazardous voltage differential in the ground, DO NOT TAKE STEPS. If one foot lands in a high voltage area and the other in a lower voltage area, the difference between the two could kill you.



**High Voltage Contact** will result in electrical current flowing down the boom and through the crane to the ground. The ground will then be energized with a high voltage near the crane and lower voltage further away.

## If you have to leave your equipment...



### Wrong

Never leave your machine unless absolutely necessary



### Right

But still dangerous!

Source: *The Code of Practice Guide for Working Near Electrical Equipment*, courtesy of UtiliCorp Canada Networks.

### Understand you can be electrocuted without touching an overhead line

It's also important to understand that you can be electrocuted without even touching an overhead line, adds Decker. Electricity can arc or jump a space between a wire and a conducting object if you get close enough. What is "close enough"? That depends on the voltage and how well grounded you are. The higher the voltage, the more likely the electricity will arc, and the further it can jump. The better grounded you are, the more attractive you are as a target for the electricity.

### Find out line voltage with the utility company

That's why the AEUSA has a code of practice outlining safe distances, which range from three metres for 40,000-volt lines to five metres for lines carrying more than 230,000 volts. If you don't know the voltage, stay back seven metres.

Bestwick encourages people working near power lines to call the utility to find out the lines' voltage. "I know that after they've called us from several work sites and we've said 25,000 volts each time, they'll figure: 'Why bother calling again?' But only the utility knows the voltage on a line, and it's dangerous to assume all the lines in one area have the same voltage." Bestwick also cautions against assuming that metal towers carry high voltage lines, and that wooden poles have low voltage lines, because the reverse can be true.

People should also understand why electricity sometimes kills and at other times only injures, adds Decker. The extent of the injury depends primarily on voltage and

current. Higher voltage is more dangerous, but the combination of low voltage/high current can be fatal. Another factor is how electricity travels through the body. If it passes through the heart or other vital organs, it can kill, says Decker. If it passes through an arm or leg, destroying the nerves, it can result in amputation. Other factors include individual physiology and how well you are grounded.

### Don't count on protection

And, adds Decker, don't count on protection from equipment or clothing, "because you need to be trained to know when and how to use them."

The best protections, says Noble, are education, job-site planning and safe work procedures. He recommends pre-job hazard assessments as well as such precautionary measures at job sites as signage, using signal people, and confirming line voltage and heights with the utility company. Company representatives routinely work with employers educating, doing site checks and suggesting ways to ensure safe clearances. But it's up to the employer "to keep reinforcing concerns and reminding people of the hazards," says Noble.

In the end, however, it all comes down to a person's awareness of the risk, says Bestwick. "People focus on their jobs to the extent that they forget the hazards. As soon as they do that, they're opening themselves up to danger."

Individuals can also take safety training programs offered by most utilities, adds Bestwick. "Just call your local utility and ask for their safety person. No company is too big or too small that we can't help."

*Norma Ramage is a freelance writer and communications consultant living in Calgary.*



Gord Decker, UtiliCorp Networks Canada  
(403) 652-5416

Tom Bestwick, Enmax  
(403) 720-7428

The Alberta Electrical Utility Safety Association (AEUSA) makes its *Code of Practice Guide for Working Near Electrical Equipment* available on request. Call Jin Ash at (403) 320-3939.

**Industry groups** provide electrical hazard training as a component of some of their courses. Contact your industry safety association to find out which courses include this training.

**The Alberta Motor Transport Association** (formerly Alberta Trucking Industry Safety Association) is developing a gravel-truck training course that addresses the hazards of overhead power lines. For information, call: 1-888-878-9835

**Lethbridge Community College** will be offering hands-on training in overhead and underground utilities sometime after June 2001. For information, call: (403) 320-3319

[www.safetybiz.com/safenews.htm](http://www.safetybiz.com/safenews.htm)  
Warning devices to prevent electrocution.  
[iadc.org/Alerts/sa98-29.htm](http://iadc.org/Alerts/sa98-29.htm)  
Power line accident.  
[www.osha-slc.gov/SLTC/construction\\_ecat/electrical\\_incidents/fatexpowerlines.html](http://www.osha-slc.gov/SLTC/construction_ecat/electrical_incidents/fatexpowerlines.html)  
Power line accidents.  
[www.osha-slc.gov/Region7/overheadpowerlines/](http://www.osha-slc.gov/Region7/overheadpowerlines/)  
Power line safety kit for employers.  
[www.osha-slc.gov/Region7/overheadpowerlines/ohpl\\_safety\\_tips\\_0300.html](http://www.osha-slc.gov/Region7/overheadpowerlines/ohpl_safety_tips_0300.html)  
Power line safety tips for the construction industry.

#### Publications

**Manual for Measuring Occupational Electric and Magnetic Field Exposures**  
Cincinnati, Ohio, 1998  
U.S. Department of Health and Human Services (US HEW NIOSH 98-154)

**OSHA's Electrical Safety and Lockout/Tagout Standards**  
by Mark Moran  
Rockville, Maryland: Government Institutes Inc., 1996 (TK 152 M64 1996)

Proven written programs for compliance.

**Occupational Health and Safety Act, General Safety Regulation**  
Section 26 includes a chart listing safe approach distances to electrical lines.

#### Videos

**The Bright Arc: A Video Guide to Powerline Safety**  
Workers Compensation Board of B.C., 20 min. (VC 0202)

**High Impact Lockout/Tagout Safety**  
Canadian Learning Company, 20 min. (VC 0324)

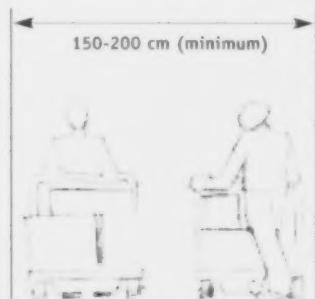
**I**n the real world, identifying and resolving ergonomic issues requires awareness, knowledge and a willingness to try new things. Real World Solutions is a regular column that suggests simple, inexpensive ways to improve employee health through adjustments to the workplace.

## Enough Space to Move



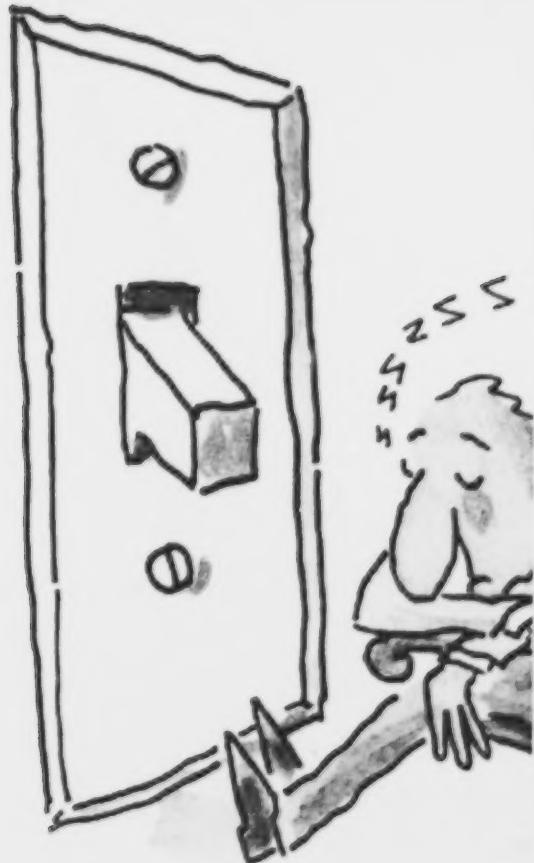
#### The Kitchen

Aisles, corridors and spaces between equipment may be too narrow for the safe and efficient movement of people and materials.



Design or rearrange aisles and corridors to maintain the distances shown in the drawings. Try to make the space wide enough for two-way traffic. Minor aisles where transport is infrequent should be at least 75 centimetres wide. Try to keep exceptions to a minimum.

- Streamlines the movement of people and materials, thereby reducing the likelihood of wasted time.
- Reduces the possibility of collisions that result in worker injury or product damage.
- Improves efficiency.



## Managing impaired workers

by Bill Corbett

Impairment, and its effects on job safety, used to be something workers and their supervisors didn't like to talk about. A tight lid of silence was maintained on not just the health and safety impact of alcohol and drugs but also of medical conditions and even fatigue.

But in recent years, the "tough-guy" attitude has increasingly given way to the realization that impairment of any kind can have a serious impact on workplace safety. In 1995, for example, drugs and alcohol accounted for nearly 10 per cent of the occupational fatalities in Alberta.

"Impairment is definitely an issue in our industry," says Ray MacDonald,

manager of safety with Cardinal River Coals. "We have people driving 260-tonne trucks on our mine site, which is like driving a two-storey house down the road. We want to make sure those people are mentally and physically fit and alert.

"Fifteen years ago, people had a difficult time talking about having an impairment problem. But things have changed. Better education, health referrals and employee assistance programs have taken a lot of the stigma away from having a problem."

Backed by clear company policies, training programs and treatment services, supervisors and managers are also much better able to detect and deal with impairment issues. And they

can do so in ways that ensure a safer workplace, while respecting the rights of workers and helping them resolve their problems.

Impairment can be anything that affects a worker's ability to perform a job safely. It includes obvious things like being under the influence of alcohol or drugs. But it could also be a heart condition or bad back that, if not properly diagnosed and managed, could pose a considerable risk to worker health and job-site safety. Or it might be the medication taken for diseases, illnesses or other health conditions. "Even an over-the-counter cold medication can have the same

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effect as alcohol, in terms of drowsiness," says MacDonald.

So, too, can an insidious form of impairment known as fatigue. "Sleep deprivation and its effects on performance can be more severe than alcohol impairment," says Dan Clarke, manager of legislation, policy and technical support services with Alberta's Workplace Health and Safety. "A sleep-deprived driver travelling at highway speed could cover the length of a football field or two during a 'micro sleep.' A drunk driver at least has a small chance to respond to a corner or to something on the road. While you would never put an intoxicated person behind the wheel, people often think nothing of having

someone drive who's only slept three of the last 36 hours.

"Fatigue tends to be downplayed and ignored. There's an attitude of 'get tough — roll down the window or have a coffee,'" says Clarke, who notes that, contrary to popular belief, there is solid evidence that the true culprits of the Exxon Valdez oil spill and Challenger explosion were sleep deprivation of those in charge of the tanker and space launch, respectively.

Awareness of various impairments and their potentially serious consequences is an important first step for both supervisors and workers. Next, supervisors must be able to identify when a worker is impaired and therefore incapable of doing his or her job safely. That's not always easy to do, especially if a worker remains tight-lipped about, say, a drug or psychological problem. When a truck driver with a 20-year unblemished safety record had three minor accidents in two weeks, for instance, it took some probing to discover he was distraught and distracted over his son's arrest on drug charges.

Still, a supervisor is usually the person best equipped to notice an impairment, since he or she knows the worker and the demands of a specific job. With proper training, the supervisor can spot telltale signs that indicate a worker is having trouble with a normally routine task or is

making uncharacteristic mistakes. At this stage, it's more important that the supervisor be able to detect an impairment than pinpoint its cause.

## Pre-placement medicals benefit workers and employers

Perhaps the quickest way to minimize impairment issues is to assess workers when offering them jobs. A pre-placement medical assessment and related tests can often unearth potential problems such as a worker with a heart condition, a bad back or a substance abuse problem.

"In terms of prevention, assessments can be pretty cost effective," says Allan Kelly, an Edmonton doctor who does medical assessments for several companies. "A screening test can reveal things like risk factors of heart attacks or back strains. By treating them early or having people take preventive measures, you can cut down on the chances of incidents."

A pre-placement medical assessment is also important because it determines the prospective employee's ability to perform safely the specific tasks of the job. "As occupational doctors, we must always address the functional ability. If you push a pencil but can't lift 20 pounds, that's not a limit to doing your job safely," says Calgary physician Rick Zabrodski. "But if you're lifting bags onto airplanes, the ability to lift, push or pull up to 100 pounds becomes more relevant."

"A functional test has to be clearly related to the demands and tasks of the job. A medical problem is not reason enough alone to deny someone a job. It must pose an immediate or direct risk to themselves, their co-workers or the public. Thus if you have diabetes but can demonstrate you have it under reasonable control, you may still be able to do your office job. But the best-controlled insulin-dependent diabetic will not be flying solo as a commercial pilot."

In safety-sensitive jobs and industries, like transportation and oil and gas exploration, drug tests have become increasingly common as a condition of employment. Where employers can run afoul of human rights legislation is in insisting that longer-term workers submit to random drug tests.

Just the presence of such pre-placement tests can weed out those with impairments, says Margie Beeston, office manager with Daltec Occupational Health Services in Calgary. "If a person knows they're not going to pass a drug screen or a health assessment, they often won't even show up for the test."



## reporting on recent convictions under the Occupational Health and Safety Act

Employer  
Baker Hughes of Canada Company

Injury:

On September 9, 1999, a perforating gun (a tool used to perforate well-casing) discharged prematurely on a rig catwalk.

Due to an obstruction in the well, the perforating device could not be lowered to the shot-point location. A decision was made to bring the perforating gun back to the surface, with the intent to lower another tool down the well to clear the blockage. When the tool was removed from the well and placed on the catwalk, the blaster disarmed it electrically, but failed to disarm the device ballistically by removing the detonator from the detonator cord. Before sending the tool down the well a second time, the blaster decided to check the circuitry to the gun. When he did so, the gun discharged. A 40-year-old consultant standing next to the tool was killed, and a Baker Hughes employee seriously injured.

Baker Hughes failed to ensure that the blaster used, handled and tested the perforating device in accordance with the manufacturer's specifications, or the specifications of a professional engineer. The company pleaded guilty under section 34(1)(d) of the Occupational Health and Safety Act, General Safety Regulation.

\$7,500

Mystical Fireworks Ltd.

On June 30, 1999, a 34-year-old worker was off-site, disposing of explosive waste materials that included fuels, oxidizers, paper product and plastics. He was emptying the materials out of a five-gallon plastic pail onto the ground when the materials caught fire and exploded, seriously injuring the worker. He was found dead at the scene. Investigators determined that the most probable source of ignition was remnants of hot ashes from a previous burn pile.

Mystical Fireworks was found guilty of failing to ensure the worker was authorized to handle, prepare or fire explosives as an explosives permit requires under section 11(a) of the Explosive Safety Regulation.

\$20,000

"There are some fairly objective signs a supervisor can look for that relate to job performance," says Bernice Doyle, an occupational health nurse consultant with Workplace Health and Safety. "Is the worker alert, responding appropriately, exhibiting good judgment and showing steady movements and good balance? There have to be performance criteria in place to determine whether the job is being done properly."

### The importance of guidelines

Companies must also have well-established guidelines relating to impairment. "You need clearly defined policies and procedures so that people in the workplace know what's acceptable and what's not," says Sharon Chadwick, an Edmonton occupational health professional. "With human rights legislation, you can't just address these issues on an ad hoc basis. There has to be a clearly defined process to determine what happens if, for example, a worker violates a zero-tolerance drug policy. It can't be a guessing game for the supervisor."

"If the supervisor has a program in place, it can be applied consistently to everyone," adds Doyle. "That way, you can follow the same procedure, whether it's for drug use or fatigue."

At Cardinal River Coals, management works closely with the union to develop and update policies on everything from drug and alcohol use to drowsy operators. The options available to supervisors under the latter policy range from requiring drowsy equipment operators to get exercise or fresh air to sending them home to rest.

"The best way to deal with fatigue is to ensure your workers get enough rest in regular, consistent time periods," says Kim Sax, an Edmonton-based consultant to the trucking industry. "The legislated hours for driving a truck are not always a fair reflection of how fatigued you can be. If a driver regularly sleeps from 10 p.m. to 6 a.m. and I suddenly tell him to drive tonight, I'm messing up his sleep cycle."

When a supervisor is unable to resolve an impairment issue personally, he or she can direct the worker to occupational professionals

such as doctors, nurses or psychologists for health assessments or counselling. Referrals can be made to occupational or physical therapists to determine if the worker can handle the specific physical demands of the job. If necessary, the employee can be offered modified work.

"The health professional determines if health is a factor and whether the worker is fit to perform the work," says Doyle. "It's not their job to determine performance."

It is the job of the employer to make sure both workers and supervisors understand what is expected of them and what resources they can access. Says MacDonald: "The key for us is education — making people aware of the consequences of being under the influence of alcohol, lacking sleep or having a physical ailment."

Bill Corbett is a Calgary writer.

[www.gov.ab.ca/hre/whs/publications/pdf/erg015.pdf](http://www.gov.ab.ca/hre/whs/publications/pdf/erg015.pdf)

Fatigue, Extended Work Hours, and Safety in the Workplace.

[www.gov.ab.ca/hre/whs/publications/pdf/erg015-1.pdf](http://www.gov.ab.ca/hre/whs/publications/pdf/erg015-1.pdf)

Fatigue and Safety at the Workplace. (Ergonomics Quick Facts)

[www.gov.ab.ca/hre/whs/publications/pdf/gh004.pdf](http://www.gov.ab.ca/hre/whs/publications/pdf/gh004.pdf)

The Impaired Worker.

[www.health.org/govpubs/phd531/](http://www.health.org/govpubs/phd531/)

The U.S. Department of Labor's model plan for a drug-free workplace.

[www.dol.gov/dol/asp/public/programs/drugs/workingpartners/matlis.htm](http://www.dol.gov/dol/asp/public/programs/drugs/workingpartners/matlis.htm)

The Small Business Drug and Alcohol Workplace Kit produced by the U.S. Department of Labor's Working Partners for an Alcohol- and Drug-Free Workplace.

[www.health.org/Index.htm](http://www.health.org/Index.htm)

The U.S. National Clearinghouse for Alcohol and Drug Information.

[www.gov.ab.ca/aadac](http://www.gov.ab.ca/aadac)

Alberta Alcohol and Drug Abuse Commission; see Resources.

# All Shook Up: Understanding V-V-Vibration

by Ray Cislo

**M**any workers are exposed to vibration daily when they use vibrating equipment or machinery. Workers operating hand-held equipment, such as a chain saw or jackhammer, are exposed to hand-arm vibration. Workers sitting or standing on a vibrating floor or seat are exposed to whole-body vibration because the vibration affects almost the entire body. The risk of injury from exposure to either type of vibration depends on the intensity and frequency of the vibration, the duration of exposure (usually measured in years) and the part(s) of the body affected.

#### Hand-arm vibration

Hand-arm vibration damages blood vessels in the hands and fingers, reducing the flow of blood and harming the skin, nerves and muscles. This is called hand-arm vibration syndrome (HAVS), also known as "vibration-induced white finger (VWF)," "dead finger" or "Raynaud's Syndrome." (Raynaud's Syndrome has many causes, vibration being just one of them). Affected fingers turn white or blanch, especially when exposed to cold. Symptoms of HAVS include tingling fingers, numbness, loss of grip-strength, clumsiness with the hands, fingertips that turn white or blue, coldness and pain in the hands. The chances of getting HAVS increase with exposure to vibration, particularly in combination with risk factors such as cold exposure and smoking. Both of these reduce the flow of blood to the hands.

Major sources of vibration among hand tools are grinders, sanders, drills, impact wrenches, jackhammers, riveting and chipping hammers, and chain saws. Hand tools with accelerations greater than  $2.5 \text{ m/s}^2$  (metres per second squared) are associated with increased rates of injury.

Unfortunately, there isn't any protective equipment that workers can wear to prevent exposure to vibration. Gloves are available with vibration-

damping material built into the palms and fingers, but have not been proven effective. If the gloves fit well, however, and don't cause the worker to tighten his or her grip, it may not hurt to try them. Regular work gloves and warm clothing are important in cold weather to keep hands warm and dry, since operating a vibrating tool with cold hands increases the risk of injury.

#### Reducing exposure to hand-arm vibration

The best way to avoid injury is to work with non-vibrating tools whenever possible. If a vibrating tool must be used, use one that has effective anti-vibration features built in. Some new designs can reduce tool vibration by more than 50 per cent.

#### Whole-body vibration

#### Whole-body vibration

The effects of whole-body vibration are poorly understood. Whole-body vibration can cause fatigue, insomnia, headaches and shakiness during or shortly after exposure. The symptoms are similar to those that many people experience after a long car or boat trip. After daily exposure over a number of years, whole-body vibration can affect the entire body and result in a number of health disorders.

While there is substantial evidence that whole-body vibration is associated with lower back and neck injuries, it's difficult to identify practical ways for employers to determine whether vehicles or other equipment produce hazardous exposures. Operators of off-road vehicles are likely to have the most hazardous exposures, although this depends on how long they work and the quality of the vehicles' suspension systems, shock absorbers, seats and tires.

*Ray Cislo, P.Eng., B.Sc. (H.K.) is a safety engineering specialist at Workplace Health and Safety.*

- Limit the amount of time (hours per day and days per week) vibrating tools are used.
- Take a 10-minute break for every hour spent working with a vibrating tool.
- Alternate work with vibrating and non-vibrating tools.
- Let the tool do the work. Use as light a grip as possible to keep the tool under control. A tight grip restricts blood flow in the hands and fingers and allows more vibration to pass from the tool to the body.
- Maintain tools properly. Tools that are worn, blunt or misaligned vibrate more.

[www.ccohs.ca/oshanswers/phys\\_agents/vibration/vibration\\_effects.html](http://www.ccohs.ca/oshanswers/phys_agents/vibration/vibration_effects.html)  
Canadian Centre for Occupational Health and Safety (CCOHS). Provides general information about vibration and its health effects.

[umetech.niwl.se/vibration/HAVHome.html](http://umetech.niwl.se/vibration/HAVHome.html)  
From the National Institute for Working Life (NIWL), Sweden, a database of power tool acceleration data.

[www.gov.ab.ca/hre/whs/publications/pdf/erg021.pdf](http://www.gov.ab.ca/hre/whs/publications/pdf/erg021.pdf)  
**Musculoskeletal Injuries — Part 5, Assessing Ergonomic Hazards.**  
Helps assess whether hand tools present a hand-arm vibration hazard.

# Old concept, new form: mentoring for young workers

by Nordahl Flakstad

**T**here's no mistaking the massive construction taking place at Shell Canada's Scotford refinery complex near Fort Saskatchewan as work proceeds on a new \$2.5-billion heavy-oil upgrader. However, it's also the site of a less visible building project — the creation of the first structured mentoring program within Canada's construction industry. The program, which teams up journeymen and apprentices one-on-one, offers young tradespeople career and safety skills to last a lifetime.

Yes, experienced construction workers have shown younger hands the ropes for years. But traditionally such on-site relationships were left to chance — dependent on journeymen who chose to volunteer advice and apprentices who chose to accept it. The Scotford program sets aside ad hoc approaches in favour of structure. It builds on the natural disposition of experienced individuals to share their knowledge with a younger generation.

*There's concern that if construction is seen as unsafe, young Albertans will avoid building trades.*

The owners, builders and the craft unions that comprise the construction consortium responsible for the upgrader project have all bought into the structured mentoring program. This unanimity doesn't surprise Tom Eggleston, the consortium's construction director. He notes that with the aging of Alberta's journeyman workforce (on average in their forties or older, depending on the trade), the industry's well-being depends

**left:** Second-year boilermaker apprentice, Nick Blenko, attaches rigging to a plate bolted to reformer tubes, while journeyman boilermaker, Emil Yakimetz, looks on. Note the sticker on Blenko's hard hat, which identifies him as a participant in the mentorship program.

on attracting younger workers. There is also the painful fact that workers under 25 are most susceptible to injury. Injured workers suffer the immediate consequences, but the wider community pays through compensation expenses and time lost. Also, there's concern that if construction is seen as unsafe, young Albertans will avoid building trades. The result will be skill shortages.

As the workforce at the upgrader project peaks near 4,500 this year, up to one in five workers may be an apprentice. With this in mind, says Eggleston, "we want young people to come and have a rewarding and safe working experience. We feel we have a responsibility to help develop the next generation. It's an investment we have determined is certainly worthwhile. If we're not taking the time as contractors, owners and building trades to regenerate the workforce, we have a short-lived vision for this kind of work in Alberta."

When the structured mentoring program was approved, the consortium's construction involvement plan manager David Mercier was asked to scout the uncharted territory. A pipefitter by trade, Mercier sought union apprenticeship trainers' advice and set out to find a program coordinator — ideally someone with a heavy industrial background and with good knowledge of the trades. "We wanted someone who was very motivated and could communicate well with apprentices."

The search led to Chris McEwen, a veteran tradesman who had taught boilermaking and steel fabricating at Edmonton's Northern Alberta Institute of Technology for 10 years. Now he was charged with developing the mentoring programs.

First- and second-year apprentices are introduced to the program during a general site orientation for all new hires and workers new to heavy construction. They are signed up for mentoring at the orientation. Soon after, at a five-hour mentoring presentation, apprentices learn practical safety-oriented skills, ranging from tying knots to handling compressed gas cylinders. They are taught the specialized words and acronyms used on site and informed about safety and





Using a reamer to enlarge a hole in a beam, first-year ironworker apprentice works under the guidance of journeyman ironworker Doug Sharpe.

safety-related agencies and other learning resources. The session also covers the mentoring project's history and orientation.

"The objective is to bring them on board and make them feel they're part of the project," says McEwen. While he emphasizes the positive, he doesn't sidestep sobering safety statistics about younger workers. He quotes an Alberta Human Resources and Employment statement on injury rates that points out that "the situation is particularly more alarming for young male workers, who are 85 per cent more likely to be injured than other workers."

Apprentices are encouraged to talk about their personal experiences in the discussions. And examples used to drive home safety lessons are drawn from young people's experiences. The apprentices understand Workers' Compensation Board premiums more easily when they are compared to the sky-high auto insurance premiums young drivers pay. When prompted to consider the young driver who lacks that all-important "sixth sense" developed through experience, they understand that as novices to the construction site they too lack that essential sensory tool kit. In contrast, says McEwen, "older guys are naturally standing in the right place, positioning their body in the right way and handling a tool in a certain way without even thinking about it. Apprentices, on the other hand, are green. They haven't yet developed their sixth sense. That's one of the reasons they get injured."

A separate four-hour orientation for mentors covers topics such as coaching, giving direction, providing feedback and active listening.

In the coming year, the program expects to reach 300 to 400 first- and second-year apprentices. Mentors and participating apprentices are identified by a distinctive logo on their hard hats.

The consortium's health, safety, environment and security manager Pat Robinson emphasizes that "the success of the program will be measured statistically and with participant perception surveys." The results will also be compared to the program's objectives.

Initial participant feedback has been positive. One mentor explained: "It gives

us, as journeymen, direct input with apprentices to help train them in proper procedures and safe work practices that might otherwise be missed. I believe it is really beneficial to the apprentice who might not have extensive field experience."

An apprentice commented that the program "allows the journeymen to work with and teach the apprentice properly. It also builds confidence in the apprentices and journeymen to work properly and safely. This program will bring about awareness of what's going on and the potential dangers. It teaches people to think before they act, which will ultimately save lives."

#### Training and safety

The Alberta Construction Safety Association (ACSA), with close to 30,000 member firms province wide, is moni-

The Athabasca Construction Joint Venture (ACJV), a contractor consortium, is building the upgrader for Shell Canada, Chevron Canada and Western Oil Sands. The upgrader is part of the \$5-billion-plus Athabasca Oil Sands Project, which also includes the Muskeg River Mine near Fort McMurray and the Corridor Pipeline, to bring feedstock south.

toring the mentoring program and giving consideration to extending the concept beyond apprentices to include workers new to an industry or new to Canada, or those returning to a trade after an extended absence.

This summer, assistant professor Aminah Robinson, of the University of Alberta's department of civil and environmental engineering, will conduct a pilot study on Scotford's mentoring program. He'll be assessing research methods for use in a wider study sponsored by the Construction Owners Association of Alberta on the effective use of apprentices.

Don Lezetc, apprenticeship and training coordinator with the International Brotherhood of Boilermakers and Welders, Local 146, foresees others copying the Scotford model. Yet, he cautions that success depends on journeymen participating voluntarily. Elmer Pruss, training coordinator with the Alberta Carpenters Training Centre, believes formal mentoring can offset contractors' reluctance to hire first- and second-year apprentices, traditionally perceived as high safety risks.

Industry associations have noted that there are many good reasons for structured mentoring to shift into high gear now, before many of today's experienced journeymen punch out and head for retirement.

*Nordahl Flakstad is an Edmonton-based writer and communications consultant.*

*Photography by Chris McEwen*



# Walking the Talk

**When managers are partners in safety, everybody wins...**

by Debbie Culbertson

## The Management System

### Part 1, Management commitment and hazard assessment

The company you manage has just developed a great workplace health and safety program. Now all you have to do is let your employees carry it out, right? Wrong. "We as executives need to work hard at understanding the core needs of our front-line people when it comes to safety," says Mel Svendsen, president and CEO of Standen's Limited, a Calgary-based manufacturing company.

Standen's manufactures parts for suspensions, including springs for farm machinery, axles, stabilizer bars and parts for off-highway vehicles. Safety is paramount in a setting where employees work with steel — a product that can be hot, sharp and heavy.

Fortunately, managers at Standen's have put policies and procedures into place that have helped make the company both safe and successful. The manufacturer is one of roughly 3,500 Alberta companies that have been awarded a certificate of recognition (COR) by Alberta Human

Resources and Employment. These certificates are given to employers that successfully participate in the Work-place Health and Safety Partnerships program.

As part of its safety regimen, Standen's Limited has a work-site safety committee. Made up of workers and management, the group identifies hazards and ways to address them. The committee also develops training programs to maximize safety. These include safe crane operation, press set-up, fire safety, first aid and forklift safety.

When it comes to safety, Svendsen believes that managers have to "walk the talk" or their employees will not take them seriously. "Our management team is evaluated according to how well they're following our safety program," says Svendsen. "We make sure that they conduct regular inspections and take corrective action where needed." Supervisors are also expected to meet informally with workers on a regular basis to find out if they have any safety concerns.

The buck doesn't just stop with the foreman on the shop floor, according to Svendsen. Even executives who are no longer "on the tools" have to actively demonstrate their own safety commitment. "I try to visit with my front-line people as often as I can," says Svendsen. "When I'm out there, I follow the safety rules. I wear protec-

tive gear and set an example for others."

Standen's Limited also provides financial incentives to supervisors who follow Svendsen's lead. The size of each manager's annual company bonus is dependent on how well he or she promotes safety. The company itself has also been rewarded for its safety efforts. "We've received rebates from the Workers' Compensation Board because of our record," says Svendsen. "In other words, we get paid for being safe."

The rewards for creating a safe workplace can be substantial. "Employers who have achieved a certificate of recognition can receive a five to 20 per cent discount on their WCB premiums," says Iain Campbell, occupational health and safety officer with Workplace Health and Safety. For one large manufacturer in Alberta, the savings were roughly equivalent to the sale of 25 units. But WCB discounts are only one part of the story. When managers put safety first, they can also improve their bottom line. "Studies show that a safer company is also a more profitable company," says Campbell. "They have better cost control, higher productivity, and better employee morale." Everyone wins when managers walk the talk.

*Debbie Culbertson is a writer and editor living in Devon, Alberta.*

## What is Partnerships?

Partnerships in Health and Safety is a province-wide injury prevention program sponsored cooperatively by government, labour and industry. It is based on the concept that when employers and workers build effective health and safety management systems, the human and financial costs of workplace injuries and illnesses can be reduced. Partnerships is for employers of any size.

### How do you benefit?

The Partnerships program offers employers:

- Tools to implement a health and safety management system.
- Guidance in applying for a certificate of recognition.
- The potential for premium refunds from the Workers' Compensation Board.

For more information about certificates of recognition or the Partnerships program, call the Partnerships hotline at: (780) 427-8842 or toll-free 310-0000.

- [www.gov.ab.ca/hre/whs/partners/index.html](http://www.gov.ab.ca/hre/whs/partners/index.html)  
Partnerships program information on the Workplace Health and Safety site.
- [www.state.me.us/mdot/planning/safety/safety1.htm](http://www.state.me.us/mdot/planning/safety/safety1.htm)  
The state of Maine's transportation safety management system.
- [tis-nt.eh.doe.gov/ism/index.html](http://tis-nt.eh.doe.gov/ism/index.html)  
The U.S. Department of Energy integrated safety management resource centre.
- [www.nohsc.gov.au/work/natsol/98-99/09\\_natsol\\_ohsmansys.htm](http://www.nohsc.gov.au/work/natsol/98-99/09_natsol_ohsmansys.htm)  
Australia's project on safety management systems.  
(See the publications link.)

### Books

**Safety and Health Management Planning**  
by James Kohn  
Rockville, Maryland: Government Institutes Inc., 1999  
(T55 S22 1999)

**Safety Through Design**  
ed. by W. Christensen  
National Safety Council, 1999  
(T55 S23 1999)

### Videos

**High Impact Safety Awareness**  
Canadian Learning Company, 18 min.  
(VC 0326)

# OHS Regulatory Review Update

The occupational health and safety regulation review is scheduled to be completed in October 2001. At the conclusion of the regulatory review process, the following health and safety regulations will be consolidated into a single regulation called the Occupational Health and Safety Regulation:

- Chemical Hazards Regulation
- Explosives Safety Regulation
- Farming and Ranching Exemption Regulation
- First Aid Regulation
- General Safety Regulation
- Joint Work Site Health and Safety Committee (JWSHSC) Regulation
- Mines Safety Regulation
- Noise Regulation
- Ventilation Regulation

### The review process

Representatives from industry, government and labour organizations have completed or are about to complete their review of the regulations listed below.

For the review process, a task force was set up for each regulation. The task force identified issues and drafted proposals for a revised regulation. Drafts have been made available for stakeholder and public scrutiny and comment.

The latest discussion papers and proposals for the regulations mentioned below are posted for review and comment on the Workplace Health and Safety Web site ([www.whs.gov.ab.ca](http://www.whs.gov.ab.ca)) under the heading The Law and You.

For more information, call (780) 427-2687, or for a toll-free connection, dial 310-0000.

### (under the Government Organization Act)

The review process has been completed. The regulation came into effect on January 1, 2001.

The review of stakeholder comments has been completed and results presented to the Council on Workplace Safety for a recommendation.

- [Chemical Hazards Regulation](#)
- [Explosives Safety Regulation](#)
- [Farming and Ranching Exemption Regulation](#)
- [Joint Work Site Health and Safety Committee \(JWSHSC\) Regulation](#)
- [Mines Safety Regulation](#)
- [Noise Regulation](#)
- [Ventilation Regulation](#)

Public consultations have been completed and the review of stakeholder comments is in progress.

# Training for Manlift Operators

by Anita Jenkins

**M**anlifts have been a standard fixture on Alberta's large industrial work sites for years. Now they are making an appearance on numerous smaller construction and maintenance projects as well. More than 6,000 of these devices – both boom lifts and scissor lifts – are currently in use in Alberta.

A manlift (also called an aerial work platform) is an extremely useful piece of equipment. A boom operated

from a small tractor-like base quickly and easily moves workers in a metal bucket or on a larger platform to a height of 18 metres or more above the ground. When the manlift is in place, the workers in the basket use a control console to operate the boom, raising and manoeuvring it into position. The platforms have a handrail around them at approximately waist level, and the control console is usually attached near the top of the handrail on the side facing the machine so that the operator can "drive" the machine base to position it for use. In larger cities such as Toronto, manlifts are being used to reach as high as 80 metres.

Manlifts are more efficient and cost-effective than the ladders, scaffolds and crane-raised platforms that painters, welders, electricians, mechanics, pipefitters and other workers have traditionally used. However, as with any other piece of equipment, the improper or careless use of a manlift creates a hazardous situation. In 1999, the Workers' Compensation Board - Alberta received 29 injury claims related to manlifts.

The most obvious danger in using a manlift is the fact that the operator – who's also the worker – is working high above the ground. Workers rarely fall out of the basket because they are required to wear a safety harness. More typically, workers are injured when they get thrown around and battered when the machine shifts, even very slightly, at ground level.

"Keep in mind that you are at the end of a big lever that extends 60 or more feet into the air," says Brad Parker, regional safety coordinator for Skyreach Equipment

Inc. "It's a law of physics. A fall of two inches at the base caused by deflation of the tires or sliding into a pothole can make the bucket suddenly move 10 or 15 feet."

Overhead barriers and obstructions such as electrical wires are a major hazard as well. In an incident at Drayton Valley in November 2000, a welder died after being crushed between the lift and a beam.

"The name of these machines quite clearly indicates their purpose and proper use," Dee Simmons, chief instructor at Touchback Safety Inc., emphasizes. One of the purposes of training manlift operators is to ensure they use the equipment appropriately – to lift people without exceeding the capacity of the basket and/or platform. "Between 500 and 2000 pounds, depending on the model," says Simmons.

The temptation to use the manlift as a crane is apparently almost irresistible at times. Simmons shakes her head when she recalls some of her experiences during her nine years in the manlift rental and training business. She tells the story of the crew that decided to use the lift to move a couch to the upper floor of a building because it wouldn't fit through the door. They loaded the couch on top of the basket to hoist it up. Another crew used a manlift to convey heavy beams up to a work site.

Rental companies offer training (their contracts normally state that a "competent person" must operate the equipment), and Touchback Safety

**Basic Manlift Safety Tips**

The trainers who were interviewed for this article provided the following basic tips for using a manlift safely.

- Read the manual, and keep it handy. Know your machine.
- Plan your work. Check for potential hazards, including:
  - a) the stability and strength of the surface under the work platform
  - b) overhead barriers such as beams and electrical wires
  - c) adverse weather conditions such as wind, rain, ice and snow
  - d) the risk of onlookers and passersby entering the work area
  - e) the equipment's state of repair and maintenance
- Wear a safety harness and all other required personal protective equipment.

## Engage your third eye!

"When manoeuvring a manlift basket or platform," says occupational health and safety officer Mike Mills at Workplace Health and Safety, "operators must continuously check that the platform does not come into contact with surrounding objects (beams, columns, wall or roof fixtures, etc.). In some circumstances, operators may have their backs to the direction of travel due to the position of the equipment or the height."



It's becoming more common for workers to use manlifts, such as this one with an 18-metre reach articulating-boom, in place of ladders, scaffolding and crane-raised platforms for work at heights.

Inc., an Edmonton company formed in May 2000, provides manlift safety training to a variety of employers, unions and other agencies. The trainers generally agree that their biggest challenges lie not so much in conveying information as in helping people to change their attitudes.

Simmons remembers the young man who arrived at a class and announced that he didn't need any training. "I already know how to operate a manlift," he informed her, "and we just have to accept that sometimes accidents happen." Simmons shot back, "What if I had to go and tell your wife and kids that you won't be coming home any more? Would you want me to tell them that accidents just happen?" This apparently humbled the young man, who still contacts Simmons occasion-

ally to report on his new and sustained level of safety consciousness.

Dave Hagen, safety manager at Chemco Electrical Contractors Ltd., says that some older workers also find it difficult to change their ways. "When we train people with experience," Hagen says, "we have to make sure that the information they bring with them doesn't stop them from learning new things."

Trainers take such challenges in stride. "I can't train people about everything that could possibly happen," Parker states, "but I can alter their mindset a bit. I tell students that they have to know their limitations."

Anita Jenkins is a freelance writer and editor who lives in Edmonton.

**REGULATIONS**  
[http://info.load-otea.hrdc-drhc.gc.ca/~legweb/clc2/otherregs/r20601aen.htm#title5\\_1](http://info.load-otea.hrdc-drhc.gc.ca/~legweb/clc2/otherregs/r20601aen.htm#title5_1)  
Canadian government regulations for manlifts.

**Touchback Safety Inc.**  
(780) 490-1265  
Several Alberta companies that rent and/or sell manlifts also offer training in their use. These companies include:

- Cansource Lifts
- Finning (Canada)
- Hertz Equipment Rental
- Rental Service Corporation Canada Ltd. (RSC)
- Skyreach Equipment Ltd.

Other sales and rental companies, such as Manhandlers Equipment Inc., put the client in touch with a training agency.



# Search Engines are the Key to the Internet

by Bob Christie

Imagine paying a visit to a library — whether it houses a specialized health and safety collection or the wide range of materials found at a local public library — and although all the books and other materials are there, they aren't organized and there's no card catalogue. It would be just about impossible to find the information you are seeking. The Internet is very much like that collection, except it's larger, and you have access to over 1,000,000,000 pages of information.

So how to find your way? If you have an address, simply typing it in can open the door to an amazing source of data. Without an address you could be in for a time-consuming search. If, however, you know the name of the neighbourhood where you're headed, help is at hand in the form of a search engine.

Search engines are some of the most important sites on the Internet. Without a search engine you have NO HOPE of finding what you need. Every search engine has a slightly different inventory of sites. Of the 50 or so engines available, some are specialized and focus on information their creators believe is important in a subject area, country, province, state or even city. The more exciting and broadly focused are the big, advertising-supported, commercial sites. Some engines are quite staid, with names like MSN Search; others have off-the-wall names like Yahoo and Google. Find and use several different search engines. Then decide which seem to fit your needs and style best. Every experienced Web surfer has a favourite.

All search engines work by using an old concept called Boolean Logic. A basic understanding of this concept will help you be more successful in your searches. When you provide a search engine with the word "safety," for example, the search engine will find over 10 million addresses for you where that word appears. Even using a more specific term like "ergonomics" produces 269,000 site addresses. However, you can use Boolean Logic to target your search. From a base of 1,346,966,000 Web pages on Google ([www.google.com](http://www.google.com)), you can narrow your search to 365 of those when you enter "RSI female assembly line" in the search box. The engine searches the group of words, called a Boolean string, like this: First it finds all references to "RSI" (298,000), then it finds all references to "female" (3,100). From this much smaller list it finds all mentions of "assembly" (415) and then, finally, all references to "line" (365). You won't be interested in all 365 pages, but the list is now manageable.

Reduce frustration and speed up your Internet search results. Search engines, properly employed, can make the Internet a powerful tool.

*Bob Christie is a partner at Christie Communications Ltd., a multimedia development company in Edmonton. Bob also supplies the majority of the Web link resources for the articles in this magazine.*

**Occupational Health & Safety Magazine** publishes Workplace Fatalities to remind readers of the importance of workplace health and safety. The information is not a final investigation report. In many cases investigations are continuing. Final investigation reports are filed at the Alberta Human Resources and Employment Library and can be reviewed there or on the Workplace Health and Safety Web site at [www.whs.gov.ab.ca](http://www.whs.gov.ab.ca) under Fatality Reports.

An occupational fatality refers to the death of a worker caused by a work-related incident or exposure.

To protect personal privacy, the fatality descriptions do not include the names of the deceased.

Work-related  
incident fatalities  
January 2001  
February 2001

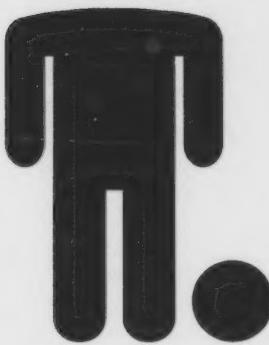
Most work-related incident fatalities that fall under provincial jurisdiction are investigated by Workplace Health and Safety. In general, highway traffic, farm, disease or heart attack fatalities are not investigated.

- A 37-year-old road-service technician was servicing a forklift at a warehouse. He was working under an electric forklift that was supported by a forklift jack. The forklift slipped off the jack and fell onto the worker. He died almost instantly of head injuries. The worker had not used support blocks under the forklift to hold the vehicle in place.

- A 38-year-old construction worker was shingling a roof on a residential construction site when he slipped and fell 6.35 metres into a neighbouring excavation site. The worker was not using fall protection equipment.
  - A 45-year-old worker was standing in a trench at a gas pipeline construction site when a mound of compacted earth, weighing more than 300 kilograms, rolled off a pile of earth next to the trench and crushed him.
  - A 58-year-old machinist died when his jacket sleeve caught in the rotating shaft of a metal lathe and pulled him into the lathe. The man struck his head on the chuck, the part of the lathe that holds the material being worked on.
  - A 17-year-old was working at a sawmill as part of a work-experience program. He was working close to a conveyor as a member of a clean-up crew when he became caught in the unguarded conveyor drives, which dragged him into the roller, killing him. He was working unsupervised around equipment without a lock-out system.
  - A 33-year-old truck driver was asphyxiated at a truck storage facility after he entered the confined space of a truck tank without first monitoring the tank's air quality. The 11,800-litre capacity truck had been used to haul water and crude hydrocarbon products in the oil field service industry. The driver removed the tank entry hatch and lowered himself into the 1.3-metre-deep tank, which contained a low oxygen, high hydrocarbon gas and vapour atmosphere.
  - A 36-year-old welder at an industrial building construction site was working on a building from a manlift basket about seven metres from the ground. He was finishing the welding of steel clips that secure horizontal beams to vertical support columns. Apparently he was crushed when he became trapped between the manlift's control console and a horizontal beam. There were no witnesses to the incident.
  - A 43-year-old welder was in the yard of a maintenance shop when he was run over by a front-end loader. His death is still under investigation.
  - An 83-year-old carpenter, who was exposed to asbestos pipe insulation while working in underground mine construction from 1946 to 1948.
  - A 73-year-old pipefitter-plumber, who worked at industrial power plants in the late 1950s. He was exposed to numerous sources of asbestos, including asbestos valve-stem packing, refractory cement, insulating cement, finishing cement, stem-tracing cement, pipe-block covers, blue asbestos sheeting, gasket sheeting, robe packing, insulating fire brick and water pipe. While working in this environment he was also exposed to the application of spray-on asbestos insulation.
  - A 70-year-old drywaller-plasterer, who was exposed to asbestos in the late 1950s.
  - A 74-year-old plumber, who was exposed to asbestos for over 30 years.
  - A 68-year-old pipefitter, who, for approximately 30 to 40 years, was exposed to a number of products containing asbestos.
- Disease fatalities**
- Disease fatalities represent claims that have been accepted by the Workers' Compensation Board (WCB) - Alberta for compensation. They are counted in the year they are accepted.
- A 71-year-old insulator, who was exposed to asbestos approximately 35 years ago.
  - A 77-year-old painter-decorator, who was exposed to asbestos throughout the 31 years he worked in his profession. Exposure occurred when he painted asbestos pipe insulation, drywall that contained asbestos mud, spray-on asbestos insulation and asbestos ceiling tiles.



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**What he doesn't know can hurt you, too.**

Workplace accidents are painful for employees and employers alike.  
New and returning employees are most at risk. In fact, their first six months are  
the most dangerous. Make sure everyone knows the safety drill inside and out.  
If someone is unsure, encourage them to ask.



**1-877-6HEADSUP**

A message from the Workers' Compensation Board - Alberta • Alberta Construction Safety Association • Alberta Human Resources, Workplace Health and Safety  
Manufacturers' Health & Safety Association • Alberta Motor Transport Association

